

AMENDMENT TO THE CLAIMS

IN THE CLAIMS:

Claim 1 (original):

An apparatus for drilling a horizontal borehole from a vertical wellbore, comprising:

- a. a drill bit;
- b. a plurality of hollow segments in the vertical wellbore, one of which is attached to the drill bit; and
- c. means for driving the drill bit through the hollow segments.

Claim 2 (currently amended):

The apparatus of claim 1, wherein the segments are stored in an unattached manner within the wellbore and are sequentially attached to one another as the drill bit ~~advance horizontally~~ advances horizontally.

Claim 3 (original):

The apparatus of claim 2, further including a magazine of stacked segments in the wellbore.

Claim 4 (original):

The apparatus of claim 3, further including a load cell located at a position in the wellbore at which a horizontal perforation is desired, wherein each segment in the magazine of

stacked segments drops into the load cell and is attached to the next adjacent segment as the drill bit horizontally advances.

Claim 5 (canceled).

Claim 6 (currently amended):

The apparatus of claim 1, wherein ~~the hollow interior of the segments form a fluid conduit for hydraulic fluid for driving the drill bit~~ said drill bit driving means utilizes a hydraulic fluid flowing through the hollow interior of the segments.

Claim 7 (withdrawn):

The apparatus of claim 1, wherein the segments are connected in a chain and are carried in a loop in the well bore.

Claim 8 (withdrawn):

The apparatus of claim 7, further including a first guide means near the top of the well bore for supporting and guiding the chain of segments into the well bore and a second guide means adjacent a location in the wellbore where a horizontal perforation is desired for guiding the segments into the horizontal perforation.

Claim 9 (withdrawn):

The apparatus of claim 8, wherein the first guide means is axially movable in the wellbore for keeping the chain of segments in tension.

Claim 10 (withdrawn):

The apparatus of claim 8, wherein the guide means is a pulley.

Claim 11 (withdrawn):

The apparatus of claim 8, wherein the guide means is a sprocket gear designed to engage the chain segments.

ARGUMENT

In the office action dated May 5, 2004, the Examiner rejected claims 4-6 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Additionally, the Examiner objected to claims 5 and 6 under 37 CFR §1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. The Examiner also rejected claims 1-4 under 35 U.S.C. §102(b) as being clearly anticipated by Vaughn et al. (US 3,301,337) or Walker (US 2,889,137) or Thompson (US 5,622,231) or Eckenfels et al. (US 6,050,351). The Examiner also objected to the title of the disclosure because the word “and” should be inserted between “Method” and “Apparatus”. Finally, the Examiner objected to the drawings under 37 CFR §1.83(a) because the Examiner believes that the drawings do not show every feature of the invention specified in the claims.

35 U.S.C. §112, FIRST PARAGRAPH:

The Examiner rejected claims 4-6 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Regarding claim 4, the Examiner rejected the claim because he believed the load cell (20), as depicted in Figure 1, has a cylindrical shape. Thus, the Examiner did not believe the specification to be clear as to how segment 16 can drop into the load cell. Applicant informs the Examiner that he has an erroneous belief as to the shape of the load cell. The vertical bars to the left and to the right of the load cell, as depicted in Figure 1, are not walls as what the Examiner believes, but are gates, which open to allow the segments to enter the load cell. As the segment in the load cell is pushed through toward the drill bit, the gate allows another segment to enter the load cell. As can be seen in

Figure 1, the segments in the magazine are positioned slightly higher than the previous segment, going from right to left. This positioning allows the segment which will be pushed into the load cell to be at a slightly higher position than the segment which was just pushed from the load cell toward the drill bit. This new segment then enters the load cell at this higher position and attaches itself by falling onto the segment just pushed out of the load cell. Since the vertical bars represent gates, and not walls of the load cell, the disclosure satisfies the written description requirement. Claim 4 should be in allowable form.

Regarding claim 5, the Examiner rejected the claim because he believed the disclosure fails to disclose how the drill stem is constructed, how it drives the drill bit, what happens to the drill stem every time a new segment is added or removed. Applicant states that this information is already known to people of ordinary skill in the art to which the invention pertains. Additionally, the Applicant has cancelled claim 5, thus making Examiner's rejection inapplicable.

Regarding claim 6, the Examiner rejected the claim because he believed the disclosure fails to disclose how hydraulic fluid is supplied to and returned from the drill bit, and in what manner the hydraulic fluid drives the drill bit. Applicant states that this information is already known to people of ordinary skill in the art to which the invention pertains. Thus, Examiner's rejection is no longer applicable and should place claim 6 in allowable form

37 CFR §1.75(c):

The Examiner objected to claims 5 and 6 under 37 CFR §1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Regarding claim 5, the Applicant has canceled the claim, thus making Examiner's rejection inapplicable.

Regarding claim 6, the Applicant has currently amended the claim to place it in proper dependent form. Hence, claim 6 should now be in allowable form.

35 U.S.C. §102(b):

The Examiner rejected claims 1-4 under 35 U.S.C. §102(b) as being clearly anticipated by Vaughn et al. (US 3,301,337) or Walker (US 2,889,137) or Thompson (US 5,622,231) or Eckenfels et al. (US 6,050,351).

Applicant informs the Examiner that claims 1-4 are distinguishable and not anticipated, taught, nor suggested by Vaughn et al. (US 3,301,337), Walker (US 2,889,137), Thompson (US 5,622,231) or Eckenfels et al. (US 6,050,351). Specifically, Applicant's claim 1 recites the following elements: a) a drill bit, b) a plurality of hollow segments in the vertical wellbore, one of which is attached to the drill bit; and c) means for driving the drill bit through the hollow segments. However, with respect to the Vaughn et al. patent, the disclosure does not utilize a drill bit; but instead, utilizes a first segment which is in the form of a truncated pyramid or core and has a flat nose which acts as a punch in initially rupturing the casing. Secondly, in the Vaughn et al. patent, the lateral from the shaft well increases in length by a pushing force, without rotation, on the end of the pipe segments. Applicant, however, uses a means to drive the drill bit which is through the hollow segments. Applicant's disclosure shows the use of hydraulic fluid, which is pumped through

the channel of the hollow segments, to turn the drill bit. For these reasons, the disclosure of the Vaughn et al. patent does not anticipate, teach, nor suggest the Applicant's claim 1.

With respect to the Walker patent, the disclosure does not show a drill bit attached to one of the hollow segment while in the vertical wellbore. In the Walker patent, a plunger first engages the drill bit and rotates it to form a hole in the surrounding ground formation. The plunger then disengages itself from the drill bit and engages itself to a drill rod. The drill rod is then rotated and pushed behind the drill bit in order to further advance the hole. In Applicant's claim 1, the drill bit is attached to one of the hollow segments while it is still located in the vertical bore. The attached first segment and drill bit are used to create the hole and initially advance the hole. Secondly, in the Walker patent, the lateral from the shaft well increases in length by use of a plunger which rotates and provides force to the end of the drill rods. Applicant, however, uses a means to drive the drill bit which is through the hollow segments. Applicant's disclosure shows the use of hydraulic fluid, which is pumped through the channel of the hollow segments, to turn the drill bit. For these reasons, the disclosure of the Walker patent does not anticipate, teach, nor suggest the Applicant's claim 1.

With respect to the Thompson patent, the disclosure does not show a drill bit attached to one of the hollow segment while in the vertical wellbore. In the Thompson patent, an insert ram first engages the drill bit and pushes it laterally into a pay zone. The insert ram then retracts and loads a shim onto it. The insert ram then extends again to push the drill bit further into the pay zone a distance equivalent to the length of a shim. In Applicant's claim 1, the drill bit is attached to one of the hollow segments while it is still located in the vertical bore. The attached first segment and drill bit are used to create the hole and initially advance the hole. Secondly, in the Thompson patent, the lateral from the shaft well increases in length by use of an insert ram which provides force to the end of the shims so that the drill bit advances into the pay zone. Applicant, however, uses a means to

drive the drill bit which is through the hollow segments. Applicant's disclosure shows the use of hydraulic fluid, which is pumped through the channel of the hollow segments, to turn the drill bit. For these reasons, the disclosure of the Thompson patent does not anticipate, teach, nor suggest the Applicant's claim 1.

With respect to the Eckenfels et al. patent, the disclosure does not mention the use of a drill bit to make and advance the lateral hole. The Applicant's claim 1, however, utilizes a drill bit to make and advance the lateral hole. Secondly, the Eckenfels et al. patent uses rods that are very stable, in particular by means of rods of a solid material, or at least of tubes having considerable wall thickness. These rods are made of solid material so that it can withstand the pressure applied by compression for advancing the rods through the lateral hole. On the other hand, Applicant uses hollow segments while advancing the segments through the lateral hole. Applicant can use hollow segments because the present invention does not use compression forces to advance the segments through the lateral hole. Finally, in the Eckenfels et al. patent, the lateral from the shaft well increases in length by use of a drilling drive device which acts upon the rear end of the rod assembly or grasps the rod assembly on its outer periphery to push the rod assembly through the lateral hole. Applicant, however, uses a means to drive the drill bit which is through the hollow segments. Applicant's disclosure shows the use of hydraulic fluid, which is pumped through the channel of the hollow segments, to turn the drill bit. For these reasons, the disclosure of the Eckenfels et al. patent does not anticipate, teach, nor suggest the Applicant's claim 1.

The Applicant's claim 1 has been shown to not read upon the cited patent references. The elements and features depicted in Applicant's claim 1 are not all shown in any of the cited references, either individually or combined. Hence, claim 1 is not anticipated, taught, nor suggested by these cited references and thus is in allowable form.

Applicant's claims 2-4 are all ultimately dependent from claim 1, which has already been shown to be in allowable form. Thus, Applicant's claims 2-4 are also in allowable form. Applicant amended claim 2 only for the purposes of correcting spelling/grammatical errors.

SPECIFICATION:

The Examiner objected to the title of the disclosure because the word "and" should be inserted between "Method" and "Apparatus".

The Applicant has amended the title of the disclosure to include the word "and" so that it overcomes the Examiner's objection. The title of the disclosure now reads as:

METHOD AND APPARATUS FOR HORIZONTAL DRILLING AND OIL RECOVERY

DRAWINGS:

The Examiner objected to the drawings under 37 CFR §1.83(a) because the Examiner believes that the drawings do not show every feature of the invention specified in the claims. Specifically, the Examiner stated that the drill stem extending through the hollow segments and attached to the drill bit for driving the drill bit, as recited in claim 5, must be shown on a drawing.

The Applicant has canceled claim 5, thus making the Examiner's objection inapplicable.